

Short Term Instruments

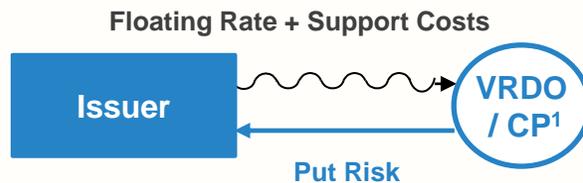
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Why use short-term or variable rate debt?

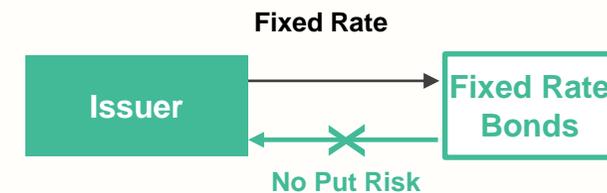
- Offers issuers diversification relative to fixed rate debt (e.g. interest cost, timing considerations, investor base)
- Historically has provided the lowest cost of capital and can avoid locking in rates for long tenors in unfavorable markets
- Provides an asset / liability balance – short-term investments naturally hedge variable rate liabilities
- May provide prepayment flexibility; remarketed securities often have flexible redemption or draw terms
- Can allow for the deferral of all or most debt service until projects are completed

Traditional Floating Rate Bonds



- ✓ Historically lowest cost of capital
- ✓ Generally achieves greatest redemption flexibility and flexibility to change between modes (multi-modal documents)
- ✗ Uncommitted funding
- ✗ Investor has put option²
- ✗ Uncertain total expense
- ✗ Maintenance of self liquidity may become onerous over time

Fixed Rate Bonds



- ✓ Committed funding – cost certainty until final maturity with no investor put
- ✓ Inexpensive optional redemption feature
- ✓ Liquidity / bank facility not required
- ✗ Higher cost in positive yield curve environment
- ✗ Can incur negative arbitrage (or no positive arbitrage) in trustee-held funds

Note: ¹Variable Rate Demand Obligations (VRDO) and Commercial Paper (CP) are traditional floating rate products; ²Put options enable the investor (bondholder) to tender (or sell) the issue back to the borrower within a specified timeframe, generally the interest reset date (for VRDOs) or maturity (for CP)

Primary Types of Short-Term Financings

Cashflow Financings

- Provide working capital to pay operating expenses, typically at fixed short-term rates
- Types of cashflow financings:
 - Tax and Revenue Anticipation Notes (TRANs)
 - Revenue Anticipation Notes (RANs)

Bridge Financings

- Provide interim / short-term financing for capital projects, at either fixed or floating rates
- Types of bridge financings:
 - Bond or Grant Anticipation Notes (BANs or GANs)
 - Commercial Paper (CP)
 - Put Bonds

Permanent Financings

- Provide long-term funding at short-term interest rates by pairing a long, nominal maturity(s) with a floating interest rate
- Types of permanent financings:
 - Variable Rate Demand Obligations (VRDOs) (Daily or Weekly Reset)
 - Floating Rate Notes (FRNs)

Primary Short-Term Borrowing Products

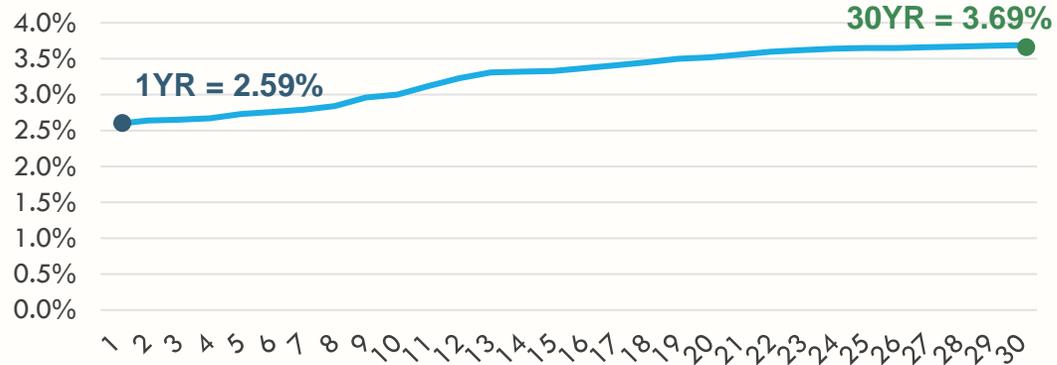
	Daily VRDO	Weekly VRDO	Commercial Paper	Floating Rate Note	Put Bond
Product Overview	<ul style="list-style-type: none"> Bonds with a long-term nominal maturity bearing interest at variable rates adjusted at daily or weekly intervals VRDO holders have the option to tender securities for purchase to the issuer Short-term tender features give VRDBs the liquidity and principal preservation characteristics of money market paper, allowing for pricing at the short end of the yield curve 		<ul style="list-style-type: none"> Short-term product that matures anywhere from 1 to 270 days Does not contain an investor put option but has a stated maturity date Effective tool to finance construction costs and working capital, provide interim / bridge financing and provide back-up liquidity 	<ul style="list-style-type: none"> Alternative to traditional variable rate products (CP or VRDBs) to generate committed floating rate funding Interest is paid monthly at the index plus a spread, which is set at pricing and fixed through maturity or mandatory tender date 	<ul style="list-style-type: none"> Fixed rate bonds that have a long-term nominal maturity with a mandatory investor put prior to maturity Priced to the put date, allowing issuers to lock in rates at the shorter end of the yield curve
Approx. Market Size	\$33bn	\$83bn	\$25-40bn	\$28bn	\$72bn
Predominant Buyer	Money Market Fund	Money Market Fund	Money Market Fund	Short Duration Intermediate	Short Duration Intermediate
Size Flexibility	No	No	Yes	No	No
Maturity	Long-term (e.g. 30Y)	Long-term (e.g. 30Y)	1-270 days	Long-term (e.g. 30Y)	Long-term (e.g. 30Y)
Tender / Put Tenor	Daily	Weekly	N/A	1-10 Years	1-10 Years
Rate Reset Period	Daily	Weekly	At maturity	Spread locked until tender date	On put date
Liquidity Required?	Yes	Yes	Yes	No	No
Pricing / Benchmark	~SIFMA	~SIFMA	~SIFMA	SIFMA + Spread % SOFR/L + Spread	MMD + Spread (+ Put Premium)

Length of Put

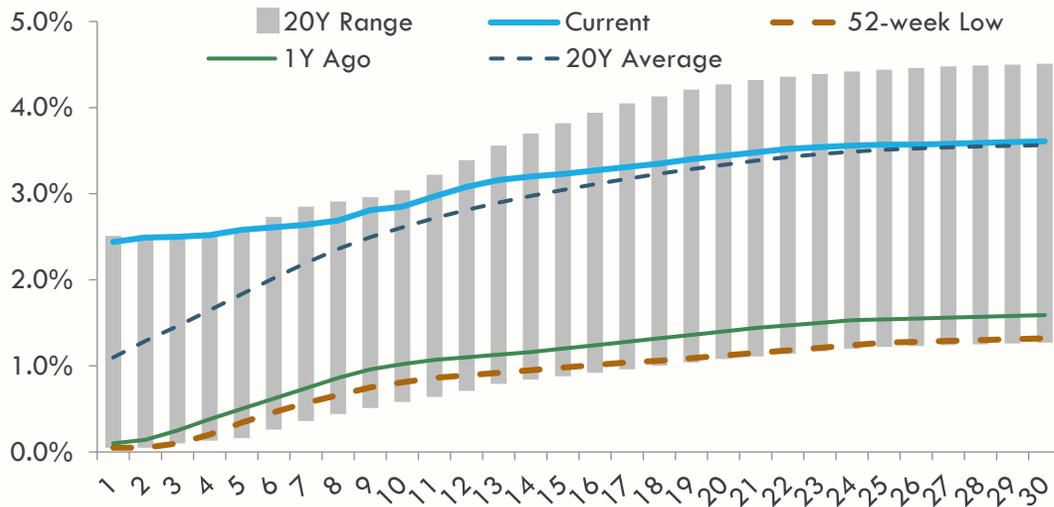


Short vs. Long-Term Rates

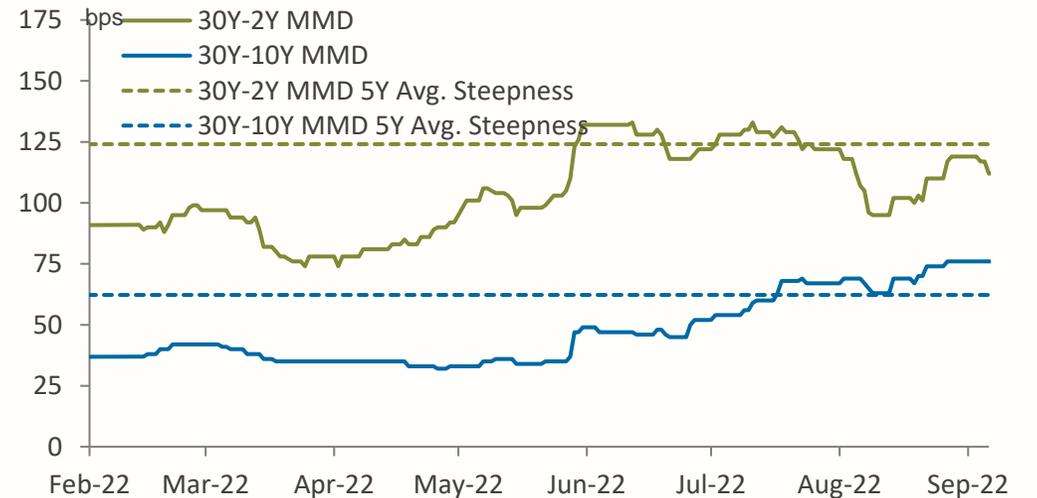
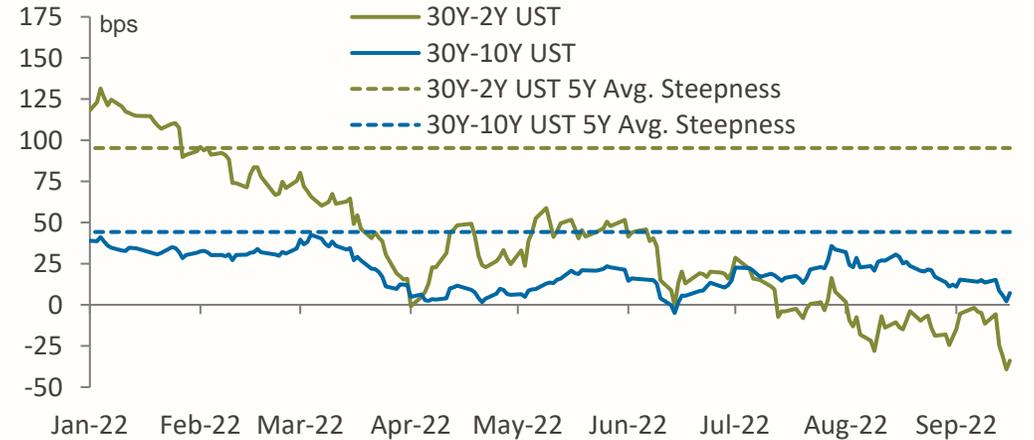
Illustrative 'Aaa' MMD Curve (09/20/22)



With the MMD being flatter than normal, it is near historical highs at the short end of the curve

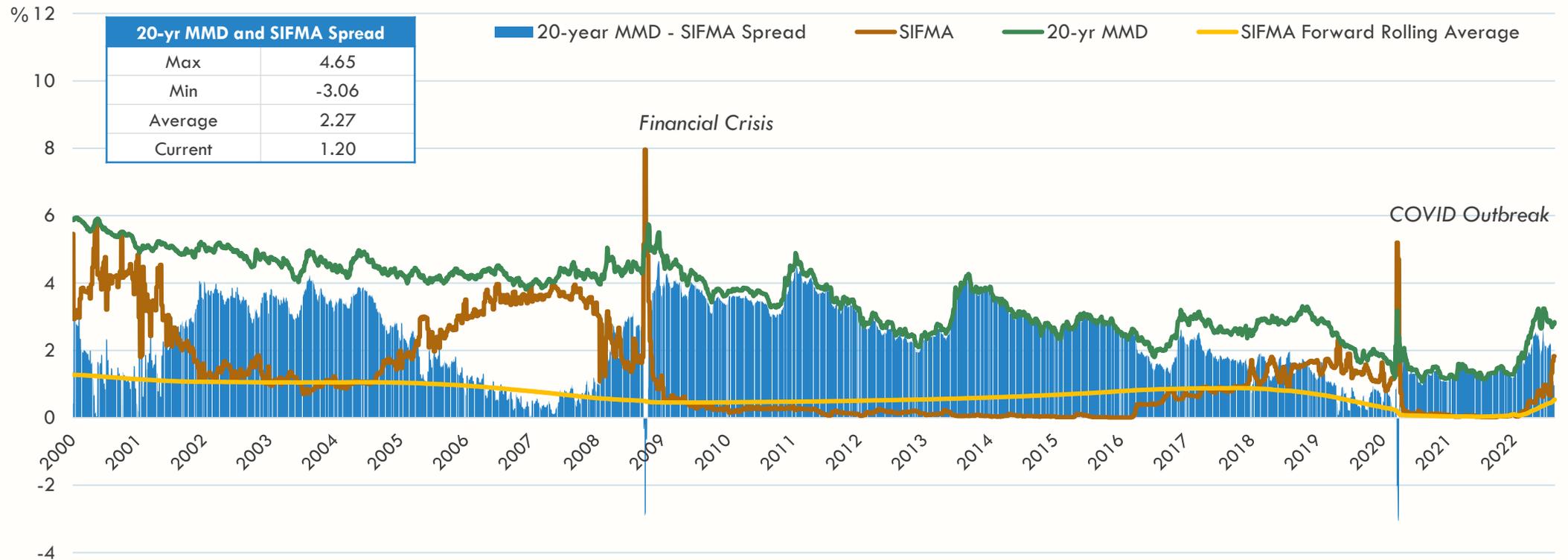


The MMD and UST yield curves remain far flatter or even inverted, versus historical trends



Variable Rate Bonds Can Provide Interest Savings

Short-term borrowing has provided savings over the last 20 years, but rates have seen significant spikes in periods of volatility



- The **yellow line** indicates that variable rate bonds have been more cost effective than long-term fixed rates in most cases over the last 20 years
- The SIFMA forward rolling average represents the average SIFMA rate from that point forward through today

Cashflow Borrowings

Tax Revenue or Grant Anticipation Notes (TRANs, RANs or GANs)

Purpose	Cashflow borrowing or capital projects
Benefit(s)	Smooths-out inconsistent revenue stream, such as property taxes or grants
Risk(s)	Short tenor and mandatory repayment require careful forecasting of future cashflows to appropriately time payment date(s)
Interest Rate	Fixed at time of sale
Primary Buyer(s)	The investor base has shifted away from Money Market Funds (“MMF”) towards and short duration bond funds
Requirement(s)	Statutory and tax limits

Examples

- City relies heavily on property tax receipts due in December and April while expenses are fairly evenly spread throughout year
- Without sufficient reserves, cashflow shortfall peaks after early December payroll payment
- TRAN proceeds bolster cash position in July to cover peak deficits in fall; balances are restored and funds are set aside to repay TRANs throughout winter and spring, before June TRAN maturity
- Credit rating is based on predictability of revenues, accuracy of projections, expected liquidity (and alternatives) at maturity, and ability to withstand less favorable results

Bond Anticipation Bonds (“BANs”)

Bond Anticipation Notes (“BANs”)

Purpose	Capital projects
Benefit(s)	Can provide seed financing in advance of a planned long-term financing
Risk(s)	Hard maturity requires a high-degree of certainty around take-out mechanism
Interest Rate	Fixed at time of sale
Primary Buyer(s)	The investor base has shifted away from Money Market Funds (“MMF”) towards separately managed accounts (“SMAs”) and short duration bond funds

Examples

- **Scenario A:** Sales tax authorization approved by voters but revenue collections don’t begin for another two years
 - **Scenario B:** Transportation authority has secured a TIFIA loan but wants to capture short-term rates now (vs. 30Y UST) and delay draw on TIFIA until a future date
- 
- Transportation authority can issue BANs now to tap future debt capacity
 - BANs are repaid with long-term financing
 - Credit ratings are typically based on expected terms of future take-out and assessment of future market access

Commercial Paper (“CP”)

Commercial Paper (“CP”)

Purpose	<p>Can be used for a wide range of needs, including:</p> <ul style="list-style-type: none"> • Construction: Financing day-to-day costs of a construction project in which the issuer needs cash on hand in order to pay contractors and suppliers • Working Capital: Financing short-term obligations involved in daily operations, such as funding accounts payable and inventory needs • Interim financing: Providing the issuer with liquidity leading up to a larger and longer term bond issue • Back up liquidity: Serving as a standing, revolving credit facility that the issuer can draw on if in need of immediate liquidity
Benefit(s)	Offers flexibility to create template for borrowing program and then draw down project funds as needed with streamlined approvals
Risk(s)	<ul style="list-style-type: none"> • Interest rate risk related to rate reset process • Typically requires third-party (bank) liquidity, for issuers not rated highly enough to provide self-liquidity
Interest Rate	Liquidity costs + Fixed rate set to a stated maturity date between 1 and 270 days
Primary Buyer(s)	Money Market Funds

CP Rate Reset Process

- CP does not contain an investor put option, but rather has a stated maturity date
- On the stated maturity date, CP can be “rolled”, meaning the dealer will sell more CP to cover the outstanding, maturing CP
- When rolling CP, the dealer will generally offer current investors “right of first refusal,” which gives the current investors the first option to reinvest in the new CP, before the dealer offers it to new investors
- The dealer will reset the rate for the new CP on the stated maturity date of the rolled CP
- A related credit or liquidity facility may be drawn in the event the CP cannot be rolled on any given stated maturity date

Top 5 Tax-Exempt Money Market Funds

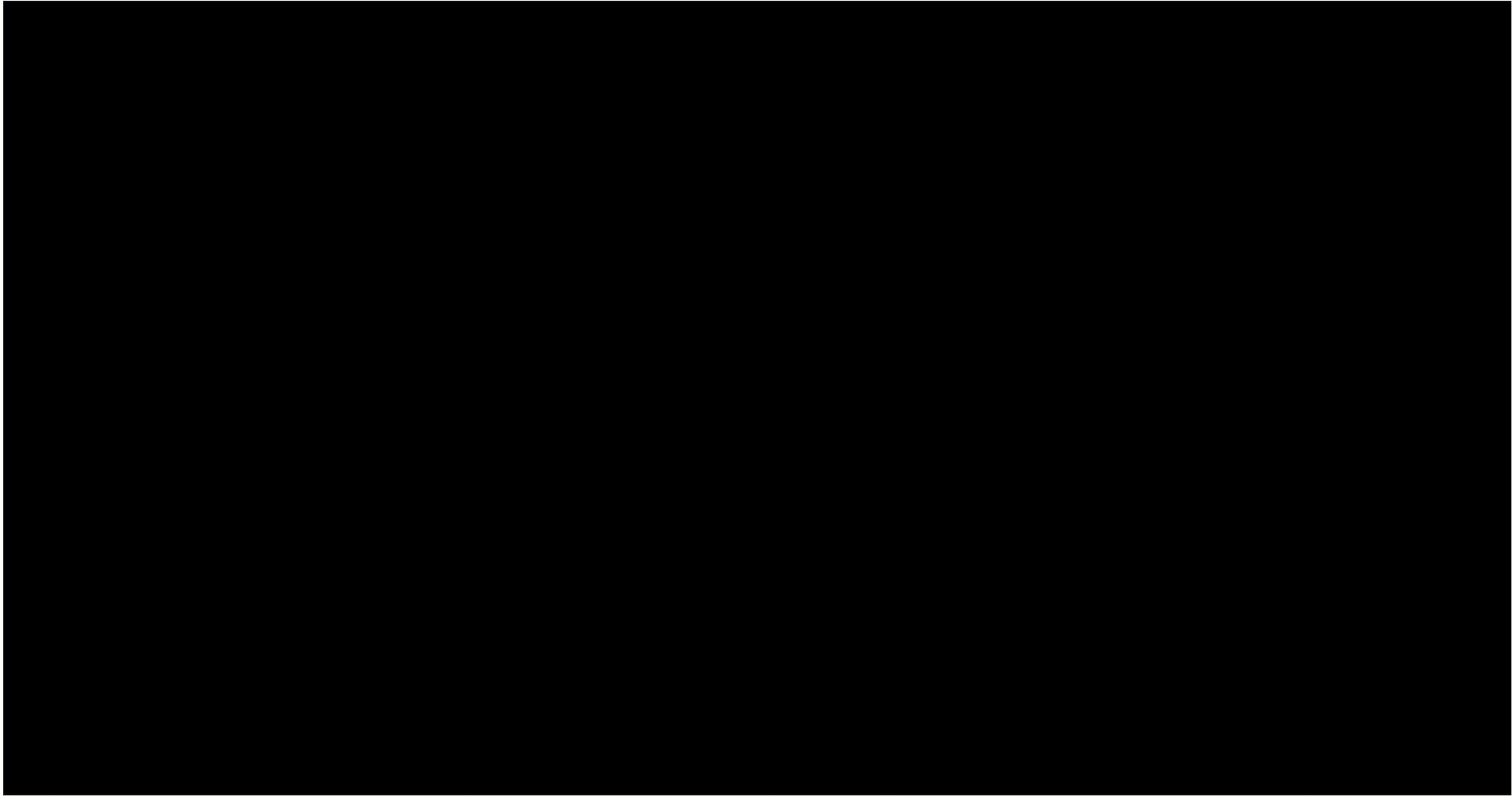
Rank	Fund Family	Amount (\$ mm)	Market Share (%)
1	Fidelity	23,771	25.1%
2	Vanguard	20,993	22.2%
3	Schwab	17,895	18.9%
4	JP Morgan	13,986	14.8%
5	Federated	7,289	7.7%
Top 5 Total		83,934	88.7%

Source: Crane T-E MMF AUM; as of 7/31/22

Commercial Paper Case Study: SFO

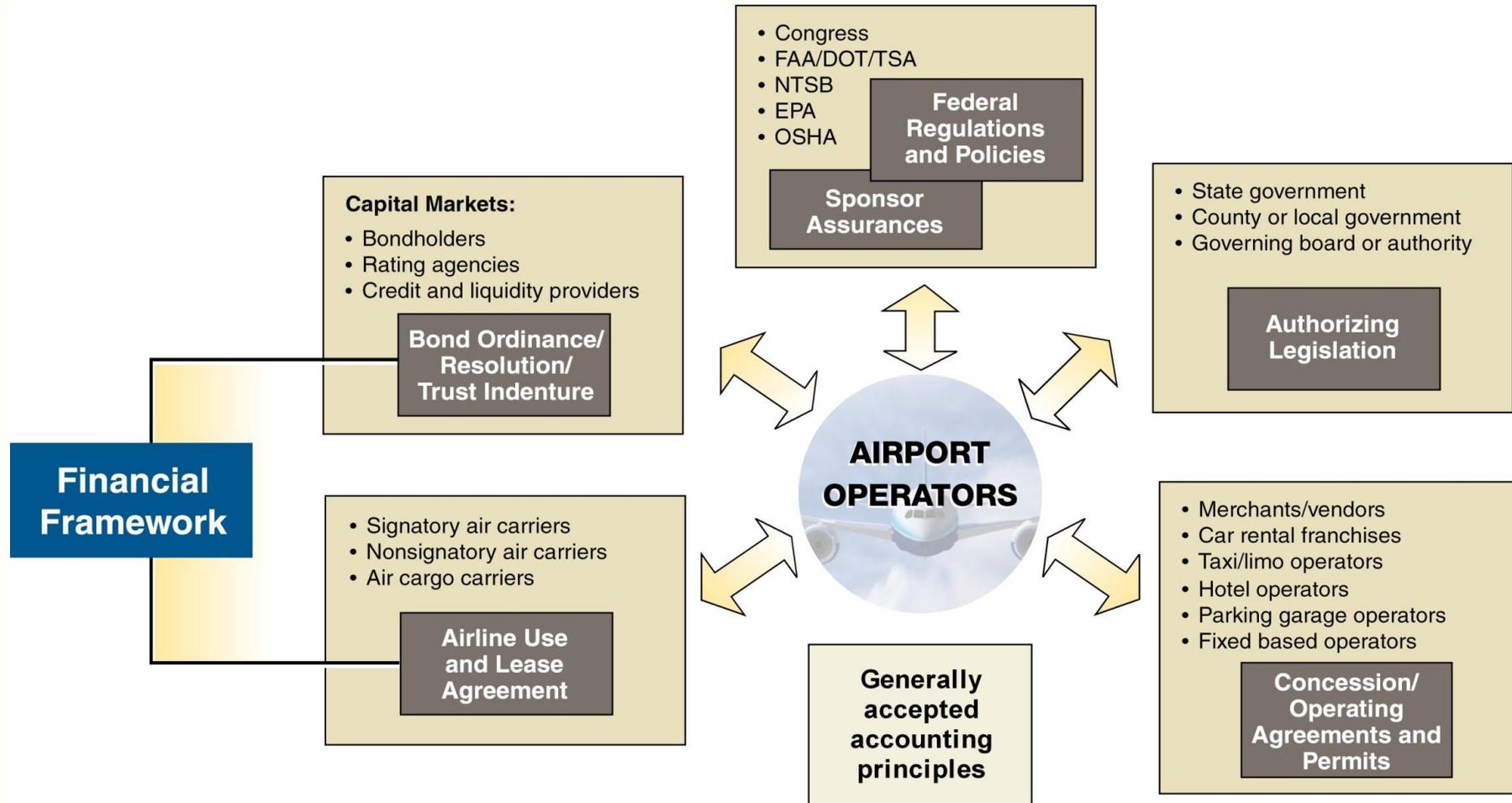


- Owned and operated by the City of San Francisco
- Principal commercial service airport for the San Francisco Bay Area
- Located 14 miles south of downtown San Francisco in an unincorporated area of San Mateo County between the Bayshore Freeway (U.S. Highway 101) and the San Francisco Bay
- Major point-to-point traffic in the United States
- Nation's principal gateways for Pacific traffic and serves as a domestic hub and Pacific gateway for United Airlines
- Prior to the pandemic, passenger traffic increased from approximately 38 million in Fiscal Year 2009-10 to approximately 57 million in Fiscal Year 2018-19
- **Video**



Commercial Paper Case Study: SFO

SFO Legal/Financial Framework



AAAE99F-0001

Commercial Paper Case Study: SFO

Balancing the Budget

Project Costs
Less:
Other sources
= **Revenue Bonds**

SFO's Lease and Use Agreement with the Airlines provides basis for cost consideration

Debt Service and Amortization

+

Operating & Maintenance Expenses

-

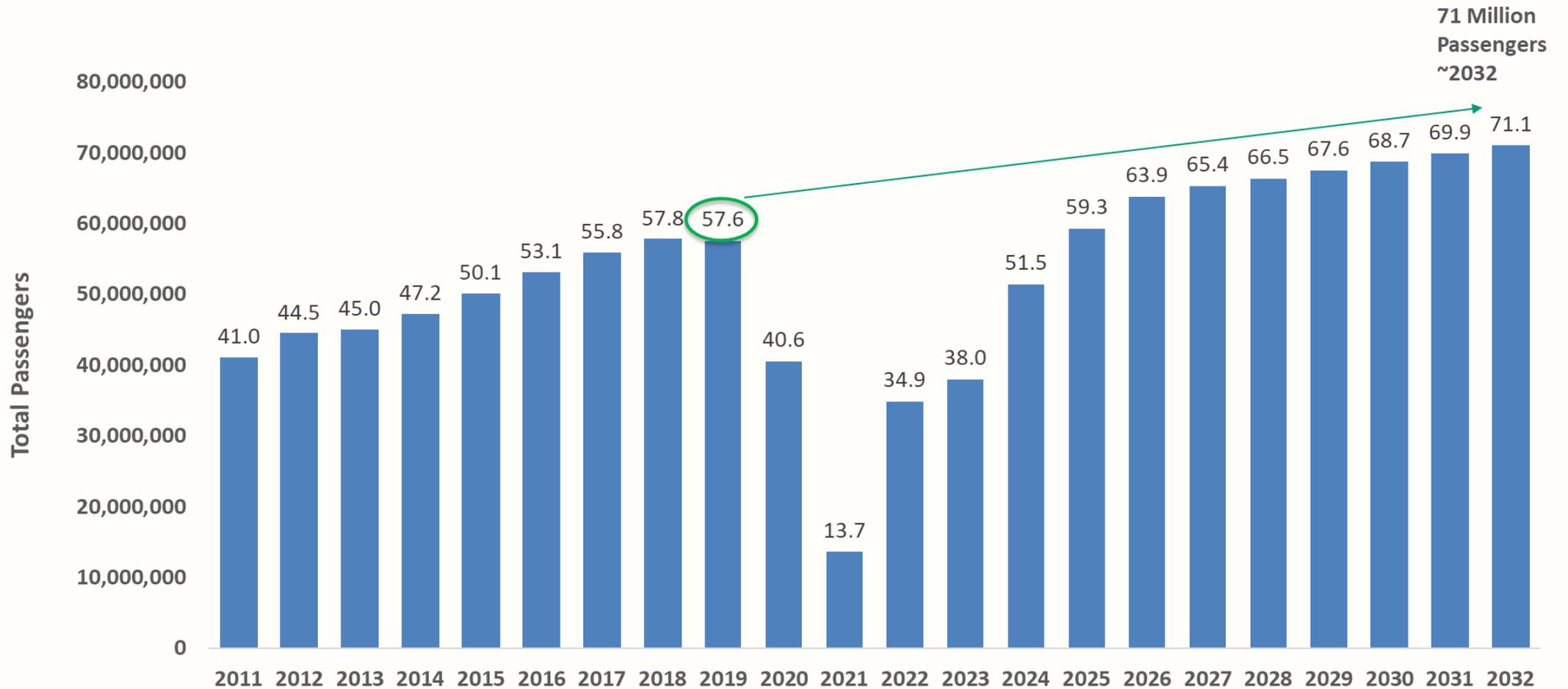
Nonairline Revenue

=

Airline payment

Commercial Paper Case Study: SFO

Traffic base underscores the importance of prudent financial management

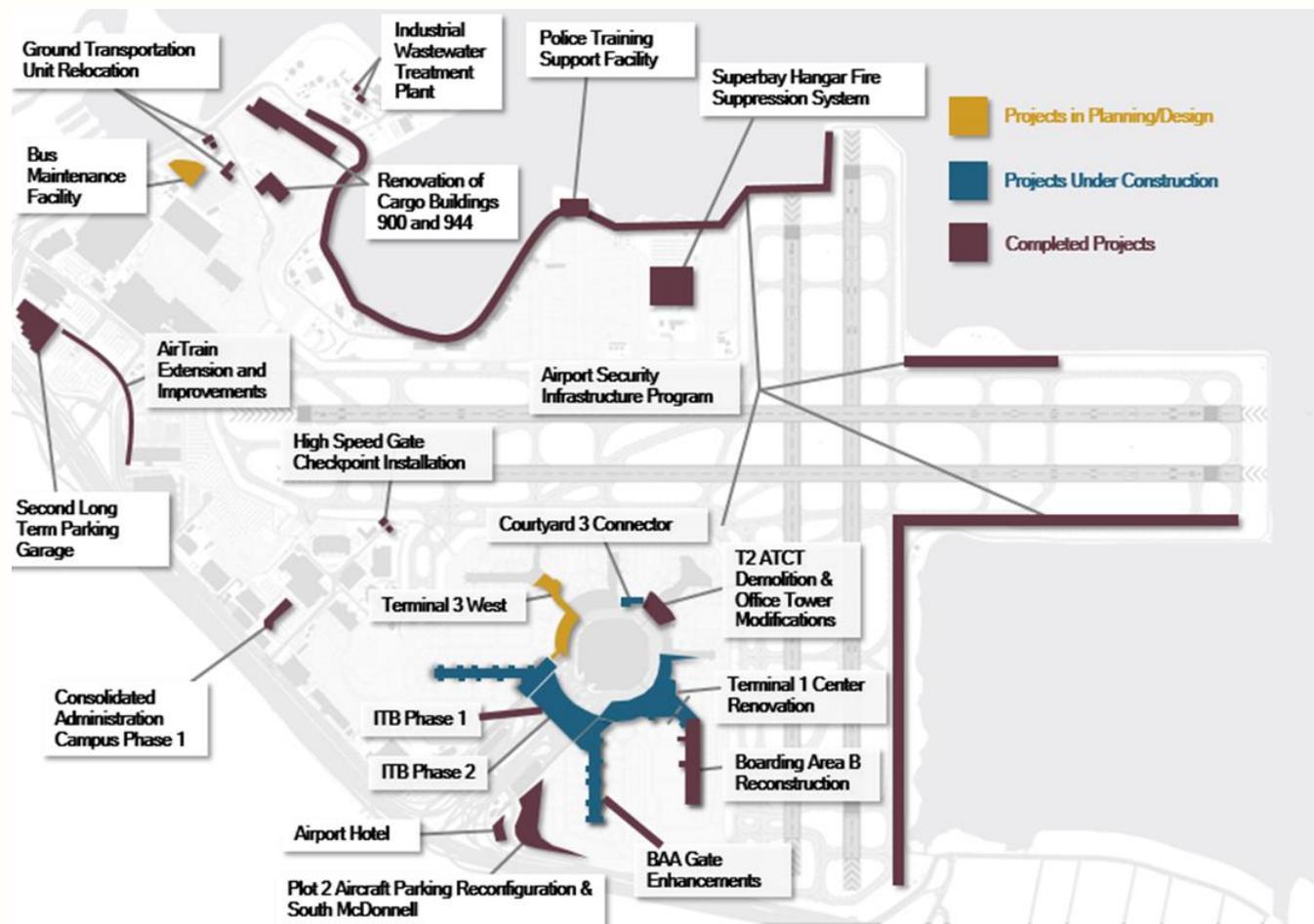


Source: LeighFisher forecasts as of November 2021 for 2023 – 2027, then LeighFisher Annual growth rate beyond 2027

Commercial Paper Case Study: SFO

Interim financing of capital funding needs

Status of Major SFO Projects (November 2021)

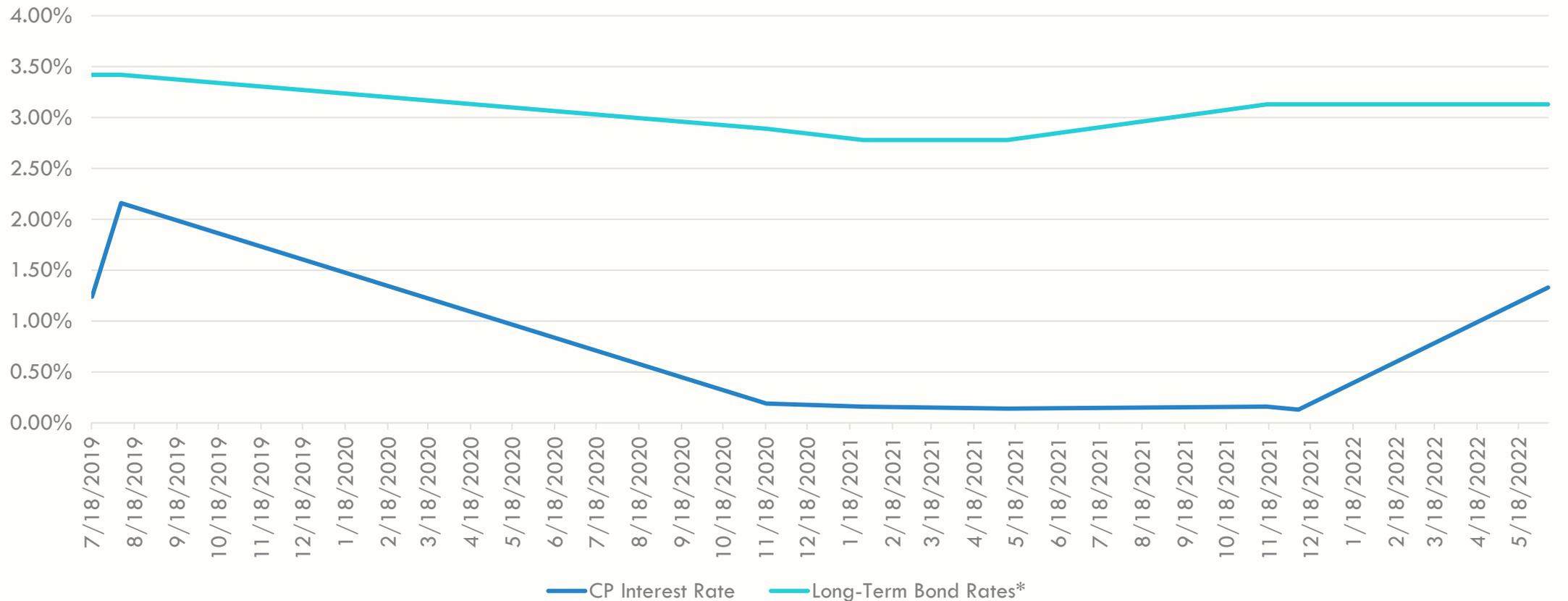


- Important source of low cost of borrowing (over long-term debt) through the pandemic and other market disruptions
- Active \$6+ billion ongoing capital improvement program

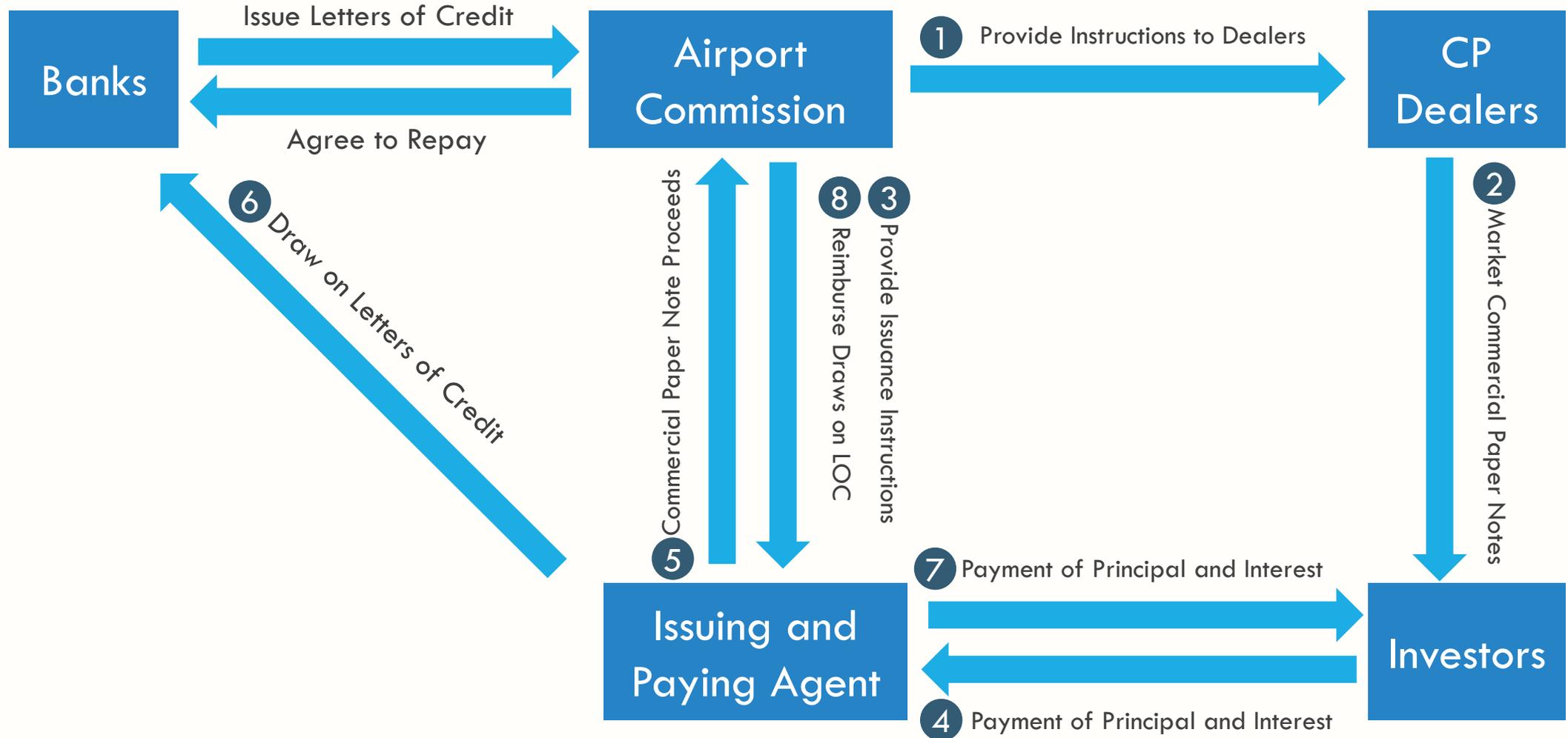
Commercial Paper Case Study: SFO

CP as an interim financing mechanism and at a lower cost

Comparative SFO Borrowing Costs



New Issuance – How does it work?



Variable Rate Demand Obligations (“VRDOs”)

Variable Rate Demand Obligations (VRDOs or VRDBs)

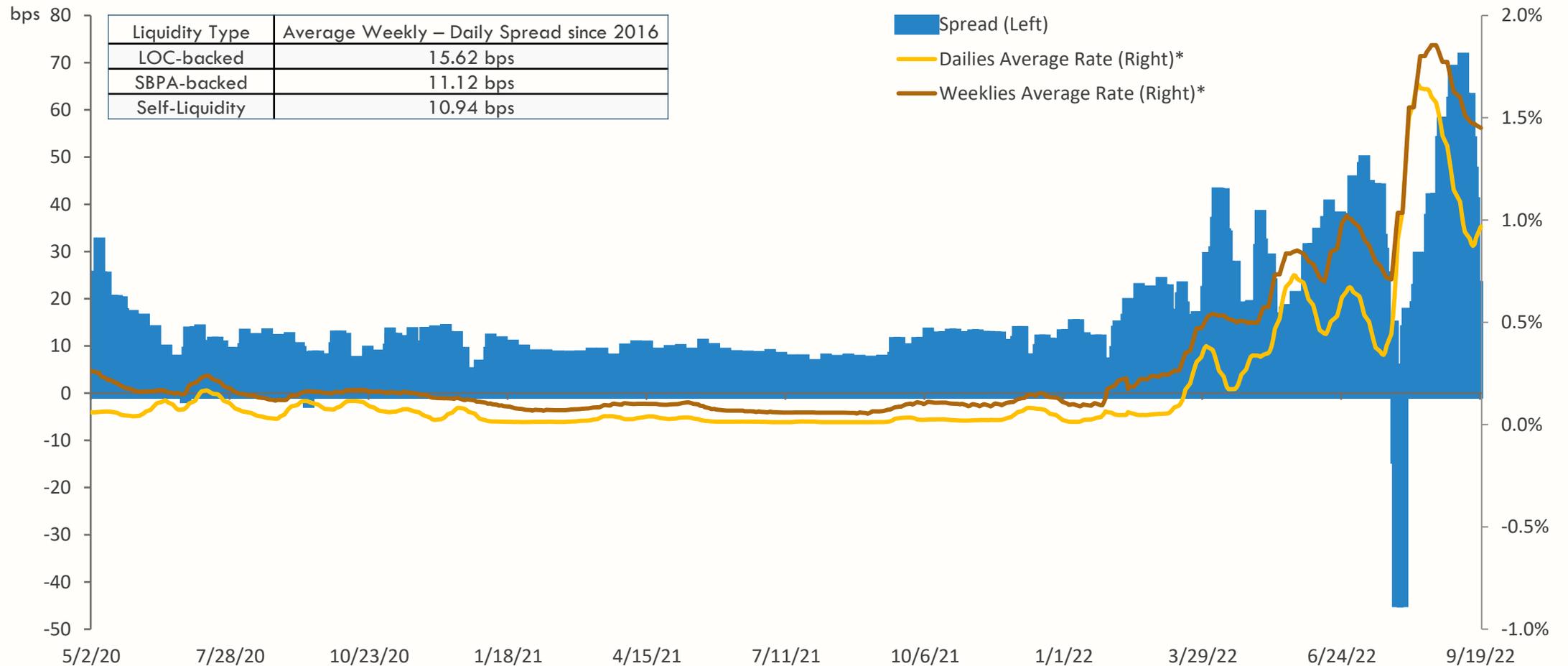
Purpose	Capital projects
Benefit(s)	<ul style="list-style-type: none"> • Access rates on the short end of the yield curve • Retain flexibility to pay off or restructure debt at any time
Risk(s)	Requires accelerated repayment from all free cash flow beyond a modest reserve; can be difficult to market to investors
Interest Rate	<ul style="list-style-type: none"> • Interest rate risk related to rate reset process • Typically requires third-party (bank) liquidity, for issuers not rated highly enough to provide self-liquidity
Primary Buyer(s)	Money Market Funds
Requirement(s)	Federal tax law limitations for tax-exempt issue

VRDO Rate Reset Process

- VRDOs are typically sold with a long nominal amortization – often a 30-year maturity structured as a lump sum, term maturity
- Interest rates are generally reset either daily or weekly, though monthly or other periodic options may be possible
- Issuers must have third party (bank) liquidity or self liquidity if highly-rated
- Remarketing agents reset VRDO interest rates based on market conditions on each rate reset date
- For **weekly VRDOs**, the remarketing agent sets a rate (typically Tuesday evening) that is effective for seven calendar days
 - These securities may be optionally tendered for remarketing by an investor on any day, typically before 5 p.m., and will settle 7 calendar days from the tender date
- For **daily VRDOs**, the remarketing agent typically sets a rate by 10 a.m. each business day
 - These securities may be optionally tendered for remarketing by an investor by 11 a.m., and will settle the same business day
- Unlike CP, investors can “put” VRDOs back to the issuer / marketing agent at each rate reset date, which makes it appealing to MMFs
 - If an investors “puts” the VRDO back, the remarketing agent will attempt to remarket the securities to a new investor
 - If a remarketing is unsuccessful, and the remarketing agent is unable to find new investors to purchase the VRDOs, the remarketing agent may, **but is not obligated to**, purchase the securities
 - If a remarketing is unsuccessful and the remarketing agent elects **not** to purchase the securities, the liquidity provider must purchase the securities

Daily vs. Weekly VRDBs

Average spreads between daily and weekly VRDBs have been around 10 bps since 2016, with wider spreads during times of market stress



Source: MSRB SHORT, Bloomberg as of 9/19/2022; *Historical rates represent 10-day moving average

CP and VRDO Liquidity Facilities

Amongst the three primary types of CP and VRDO liquidity, the appropriate option is dependent on the issuer's characteristics and necessities and will determine the ratings for the VRDB

Bank Liquidity Facilities

- Standby Bond Purchase Agreements (SBPA) or Revolving Credit Agreements
- Banks fund the purchase price of a failed remarketing
- Does not guarantee the payment of principal and interest
- The bank has the option to terminate or suspend payments immediately in case of:
 - Voluntary issuer bankruptcy
 - Issuer fails to pay principal or interest
 - Issuer defaults on parity debt
 - Involuntary bankruptcy
 - Issuer falls below investment grade
- Issuer's generally must be rated AA- or better
- VRDBs carry bank's short term ratings and issuer's long term ratings
- Subject to future extensions

Bank Direct Pay Letter of Credit

- Reimbursement Agreement or Letter of Credit
- Supports payment of principal and interest when due
- Banks must pay bondholders, leading to guaranteed payment of principal and interest
- Issuer generally has to pay a larger premium to the bank for the guarantee
- The bank does not have the option to terminate or suspend payments despite:
 - Bankruptcy of the issuer
 - Downgrade in ratings
 - Default of the issuer on outstanding VRDBs or parity debt
- Utilized by issuers rated A+ or lower
- VRDBs carry the bank's short and long term ratings
- Subject to future extensions

Self-Liquidity

- Allows the issuer to not have to pay for bank support, but requires the issuer to have a strong balance sheet or readily accessible liquidity
- The issuer has to be able to fund the VRDBs upon any possible tender option exercised by the investors
 - The issuer must directly pay investors if its VRDBs are not successfully remarketed
- Issuers will generally utilize direct bank lines to backstop the potential draw exposure and maintain flexibility for its balance sheet
- The issuer must have a stand-alone, short term rating that includes a review by a rating agency of the issuer's management and administration capabilities for the program
- While an 'A' category issuer could provide self-liquidity for CP and VRDBs, most issuers who will be able to provide self-liquidity will likely be rated in the 'AA' category or 'AAA'
- Self-liquidity may require the reallocation of internal assets to ensure the given short term ratings of the VRDB program

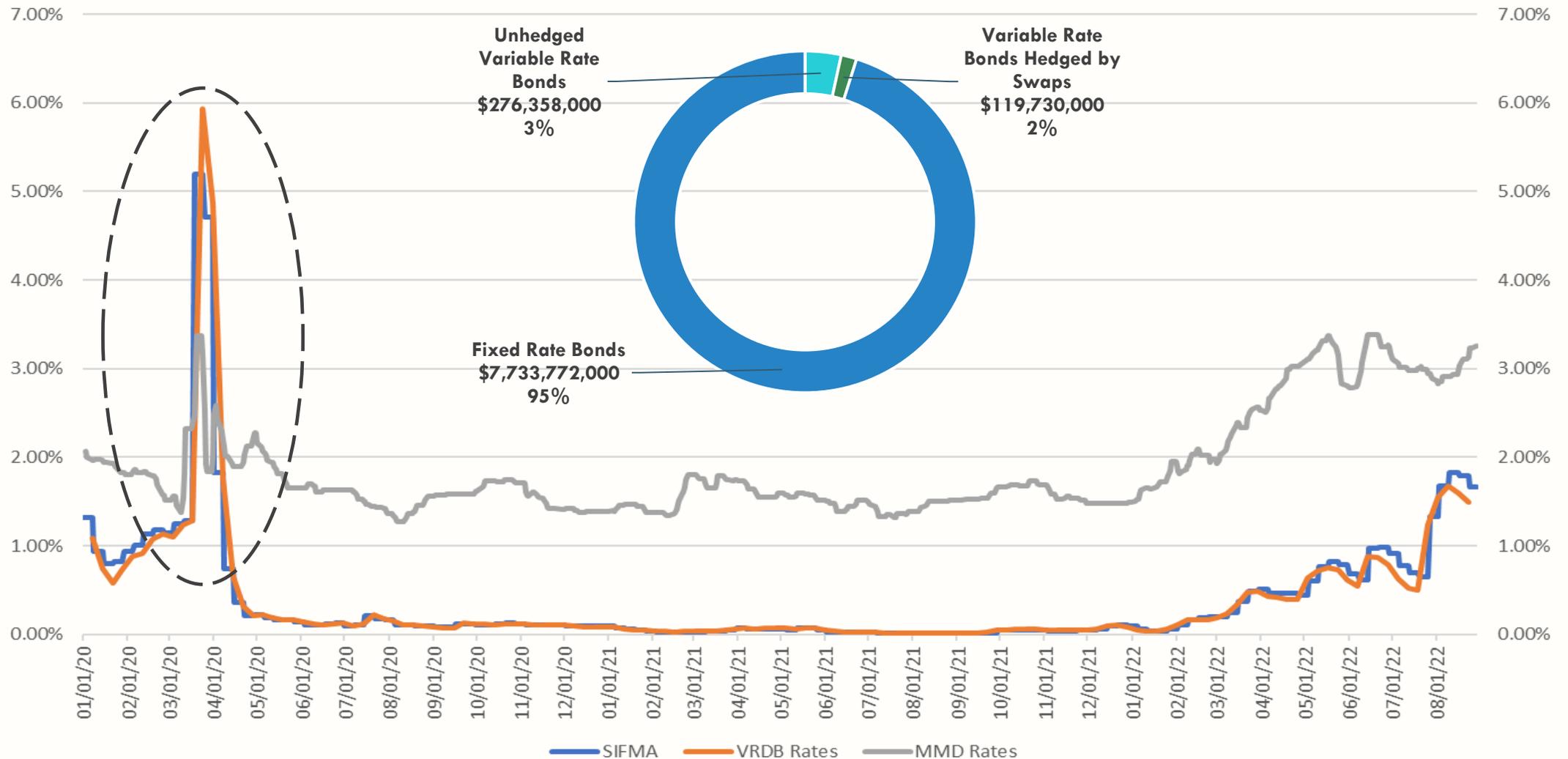


Liquidity Facility Case Study: SFO

- **Height of the financial crisis - \$779 million in VRDBs**
 - VRDBs comprised 22% of outstanding debt
- **Debt comprised about 40-45% of operating budget**
- **Used after 9/11 to lower debt service costs**
- **Support by Letters of Credit**
 - Credit providers must possess current long-term credit ratings equal to or better than **A2/A/A** and **short-term ratings of P-1/A-1/F1** or equivalent from at least two of the three rating agencies pursuant to SFO's Debt Policy
 - Depending on the terms, issuer can be impacted by the change in its credit rating

Liquidity Facility Case Study: SFO

VRDB generally outperforms long-term debt



Floating Rate Notes (“FRNs”)

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Purpose	Can generally be used in any capacity that traditional floating rate products like VRDOs would be used, to generate committed floating rate funding
Benefit(s)	<ul style="list-style-type: none"> No liquidity is needed because there is no remarketing over the life of the bonds Depending on put date, may be sold with optional par call feature ranging from 3-12 months
Risk(s)	<ul style="list-style-type: none"> Interest rate risk related to underlying floating rate benchmark Many issuers pursue hedging strategies to mitigate floating rate risk
Interest Rate	<ul style="list-style-type: none"> SIFMA or SOFR (or % thereof) plus a risk-based spread Pricing may be based on a par or premium coupon structure Pricing may assume either a soft or hard put feature
Primary Buyer(s)	Muni market investors looking to include floating rate debt in their portfolio in a defensive position to take advantage of and hedge against a rising interest rate environment

FRN Put Options

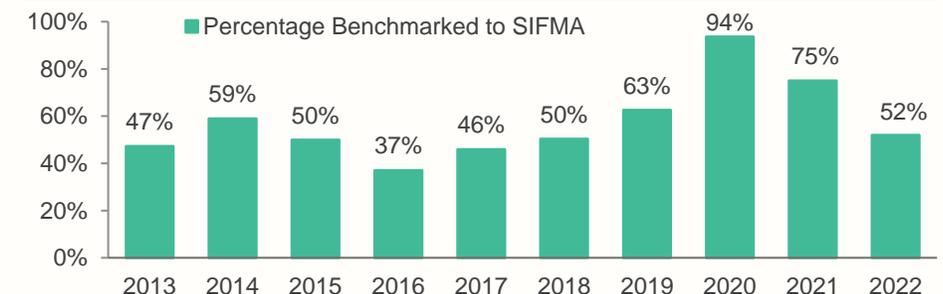
Soft Put FRN

- If Soft Put FRNs are not refinanced at the mandatory tender date, the issuer pays a punitive stepped-up interest rate on the bonds, but no event of default occurs
- The interest rate may “step-up” over a few periods if the bonds continue to remain outstanding, or it may automatically step up to the pre-determined maximum rate
- FRNs may be structured similar to the “term-out” feature of a bank liquidity facility whereby principal is paid over a defined period

Hard Put FRN

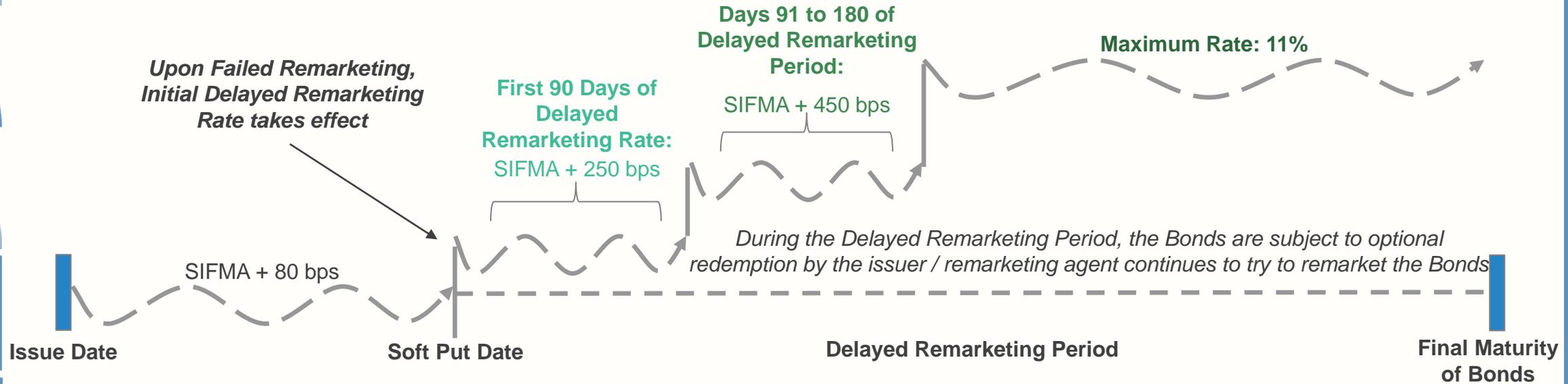
- If Hard Put FRNs are not refinanced at the mandatory tender date, the issuer is considered to be in default

Most FRNs are benchmarked to SIFMA



Comparative FRN Soft Put Structures

Step-Up Structure



Immediate Max Rate Structure



USD LIBOR Transition

In 2017, the ICE Benchmark Association announced its intention to retire LIBOR rates (*actual timeline may differ*)



USD LIBOR Transition Background

- In 2017, the ICE Benchmark Association announced its intention to retire LIBOR rates at the end of 2021
 - Ultimately, it was determined that **most** US Dollar denominated (“USD”) LIBOR maturity tenors would continue to be published until June 30, 2023 but that most banks would be encouraged **not** to enter new LIBOR-based contracts after 2021
- The LIBOR Replacement date is the first London banking day following June 30, 2023
 - The benchmark replacement rates will be used for each reset date occurring under the contract on and after the LIBOR Replacement Date
- In March 2022, President Biden signed into law the Consolidated Appropriations Act, 2022, which includes federal legislation that provides a solution for legacy financial contracts tied to LIBOR
- The legislation provides clarity, prevents disruption, and creates safe harbors for the transition from USD LIBOR to SOFR for **Tough Legacy Contracts** at USD LIBOR cessation on June 30, 2023
 - **Tough Legacy** - Existing LIBOR referencing contracts that are unable, before June 30, 2023, to either convert to a non-LIBOR rate or be amended to add fallbacks
- Application of the legislation does not depend upon what type of contract it is (e.g., a security, loan, mortgage, swap, etc.), but rather depends upon whether and how provisions in the contract deal with the replacement of LIBOR (known as “fallback provisions”).
- The federal legislation scope covers contracts that are governed by U.S. law only
- Any contract within the legislation’s scope can be taken out of scope by mutual agreement of the parties to the contract
- The legislation requires Federal Reserve Board to issue regulations specifying SOFR based benchmark replacement rates no later than 180 days after the legislation becomes effective